Fluovac

Anesthetizing System

User's Manual

Fluovac System *MA1 34-0388*

HARVARD
APPARATUS

Publication 5396-002 Revision A

WEEE/RoHS Compliance Statement

EU Directives WEEE and RoHS

To Our Valued Customers:

We are committed to being a good corporate citizen. As part of that commitment, we strive to maintain an environmentally conscious manufacturing operation. The European Union (EU) has enacted two Directives, the first on product recycling (Waste Electrical and Electronic Equipment, WEEE) and the second limiting the use of certain substances (Restriction on the use of Hazardous Substances, RoHS). Over time, these Directives will be implemented in the national laws of each EU Member State.

Once the final national regulations have been put into place, recycling will be offered for our products which are within the scope of the WEEE Directive. Products falling under the scope of the WEEE Directive available for sale after August 13, 2005 will be identified with a "wheelie bin" symbol.

Two Categories of products covered by the WEEE Directive are currently exempt from the RoHS Directive – Category 8, medical devices (with the exception of implanted or infected products) and Category 9, monitoring and control instruments. Most of our products fall into either Category 8 or 9 and are currently exempt from the RoHS Directive. We will continue to monitor the application of the RoHS Directive to its products and will comply with any changes as they apply.

- **Do Not Dispose Product with Municipal Waste**
- **Special Collection/Disposal Required**

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Use of the Fluovac

The Fluovac is well established as an extremely efficient anesthetic scavenging unit in leading institutions where a safe working environment is essential.

The unit also provides an extremely easy and practical method of anesthetizing small mammals, reptiles, and birds.

In practice, the anesthetic vapor is administered to the patient via the Fluovac mask inner tube and excess vapor is scavenged via the outer tube of the mask. This excess is then drawn through a fluosorber a canister containing activated charcoal which absorbs anesthetic very efficiently onto the surface of the specially treated charcoal granules. See diagrams 1 and 2.

The animals are anesthetized by holding their muzzles to the mask until anesthetized.

Masks available for the Fluovac are:

Size 1: Small Animal Double Mask – suitable for small species, e.g. Rats, mice, hamsters, etc.

Size 2: Single Outlet Mask – suitable for use with guinea pigs, marmosets, etc.

Size 3: Single Outlet Mask – suitable for use with cats, rabbits, etc.

The masks are easily interchangeable as they simply fit onto the top of the Fluosorber canister.

The Fluosorber canisters are consumables which are replaced when their absorption capacity is exhausted. This is determined by simply checking the weight of the canister. Instructions are given on the side of the canister.

Operation of the Fluovac

Setting up the Equipment (see diagrams 2 and 3)

The anesthetic vaporizer is connected to the gas supply. The flow of the gas is regulated by a flowmeter set according to requirements per the application.

The vaporizer outlet is connected to the Fluovac. If using the Double Small Animal Mask (size 1). The supply is split into two by means of a "Y" piece or a gas flow director.

The mask "T" piece is a push fit onto the top of the Fluosorber which in turn stands on the mounting situated on the Fluovac.

The system is now ready to use.

Fluosorber

The Fluosorber canister contains active charcoal which absorbs the anesthetic gases.

New canisters weigh 1200 grams. The exhausted weight is 1400 grams. When exhausted they are discarded and can be incinerated. It is recommended to check weight prior to use on a regular basis. Replace with a new canister.

Using the Equipment

Switch on the Fluovac. Turn the gas supply on (oxygen and/or nitrous oxide).

Adjust the flowmeter to give a flow of approximately 4 liters per minute. This can be adjusted later as required.

If using one arm only of the Double Small Animal Mask, clamp off the supply which is not in use or turn the gas flow director to the required mask, if one of these is fitted. Two animals may be anesthetized simultaneously if required.

Hold the muzzle of the animal in the mask and turn the vaporizer to approximately 4% to induce anesthesia. Once induced, anesthesia is maintained at approximately 1.5%, flow is also reduced to approximately 500cc/min. This varies with species and size of the animal.

To use the Fluosorber economically, we would recommend using the lowest flow and the lowest concentration of anesthetic vapor to five acceptable levels of anesthesia.

***IMPORTANT*: DO NOT USE THE FLUOVAC WITH FLAMMABLE GASES**

Maintenance

The Fluovac requires little maintenance apart from regular cleaning.

Pay particular attention to the gap between inner and outer tubes of the mask as hair could accumulate and impair the scavenging efficiency of the unit.

Ordering Information

Replacement Parts

Any part of the unit may be replaced by the user, although we would recommend the return of the whole unit in the event that the unit needs servicing. (See diagram 1 for illustration of the parts).

Catalog No.	Product
MA1 34-0393	Gas Flow Director
MA1 34-0402	Isolator Valve
MA1 34-0427	Replacement Tubing (outer) Size 1 Mask
MA1 34-0428	Replacement Tubing (outer) Size 2 and 3 Mask
MA1 34-0389	Size 1 Mask Unit End Piece
MA1 34-0390	Size 2 Mask Unit End Piece
MA1 34-0391	Size 3 Mask Unit End Piece
MA1 72-1085	Silicone Tubing
MA1 34-0422	PVC Tubing 6 mm Bore
MA1 34-0782	PVC Tubing 8 mm Bore
MA1 34-0415	Fluosorber, case of 6 canisters

The Fluovac unit is supplied with the twin Size 1 Mask and the connector set comprising of:

- **1 Meter PVC tubing**
- **1 Y-piece**
- **2 Silicone Rubber Tubes**
- **1 Clamp**

Or – If requested, a **Gas Flow Director** *is available*

Appendix A: Fluovac Connector Sets

The system is illustrated in diagram 2 and can be considered as having a gas supply, a flowmeter, a vaporizer, and the Fluovac Unit.

Each of these units has to be connected and the following notes are intended for guidelines.

1. Cylinder to Flowmeter:

Gas cylinders with suitable regulator gauge should be provided by the user and will be connected to the flowmeter with the appropriate high pressure hosing. Gas-specific fittings are included with the flowmeter for connection.

2. Flowmeter to Vaporizer:

Appropriate tubing is supplied with the anesthesia machine for connection from the flowmeter to the vaporizer inlet endcap.

The anesthetic agent to be used is indicated on the vaporizer – USE ONLY THE AGENT INDICATED.

3. Vaporizer to Fluovac:

Please refer to diagram 3.

The vaporizer connects to the Fluovac system via the outlet endcap. The Y-piece divides the gas flow into two 15cm silicone tubes – one of which is fitted with a clamp so that on e mask may be used alone if so desired. The silicone tubes fit directly onto the mounts of the Fluovac T-piece.

NOTE: The PVC tube, Y-piece, silicone tubes, and clamp are included with the basic Fluovac unit (catalog number 34-0388).

Appendix B: Ancillary Equipment

Induction Chambers

If an induction chamber is required prior to use of the anesthetic mask, there are several modes available from Harvard Apparatus, with appropriate connectors and valves.

We also have an Exhaust Tube Mount (34-0392) for ducting nitrous oxide and the Gas flow Director (34-0393) to replace the connector "Y" piece and clamp.

Isolator Valve

This valve directs gas from the Fluovac mask when not in use for short periods. The advantage is that neither the vaporizer setting nor the flowmeter settings have to be altered when an animal is removed from the mask, thus saving time.

Work Station and Trolleys

Several types are available. These give the advantage of a fully mobile anaesthetizing system or work station.

Contact Information

For full information on all anaesthetic equipment, please contact:

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Diagram 1

Fluovac Parts Identification

Diagram 2

Using Fluovac for Scavenging with Intubation

Diagram 3

Using Fluovac for Administering Inhalation Anesthetic and Scavenging

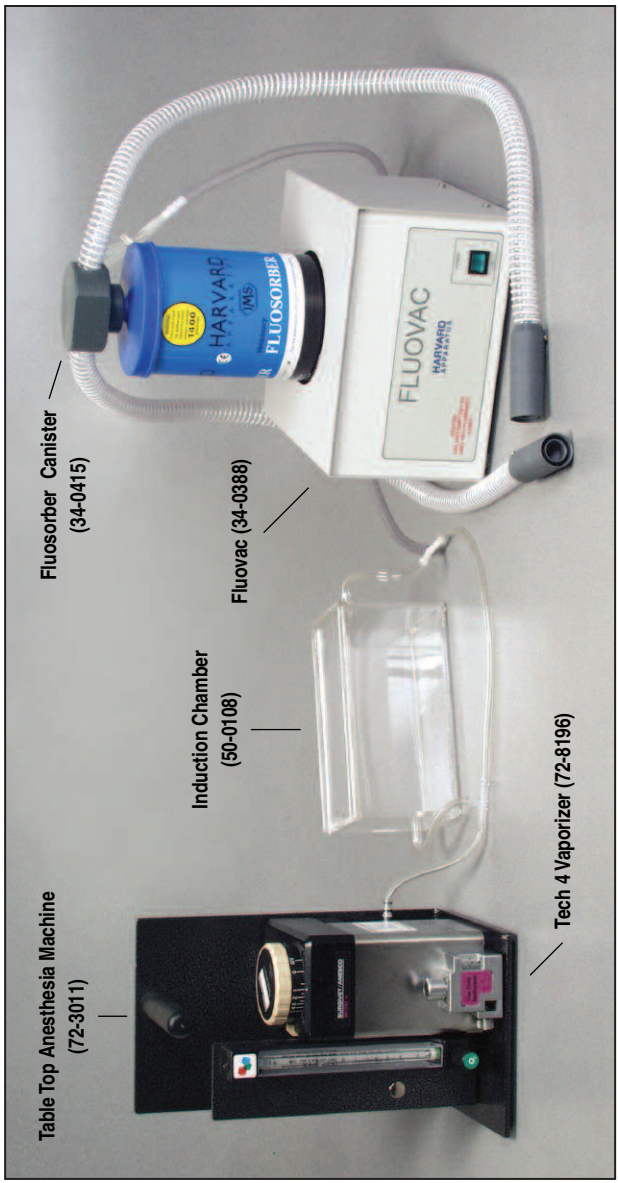

Diagram 4

Fluovac Tubes & Mask Assembly

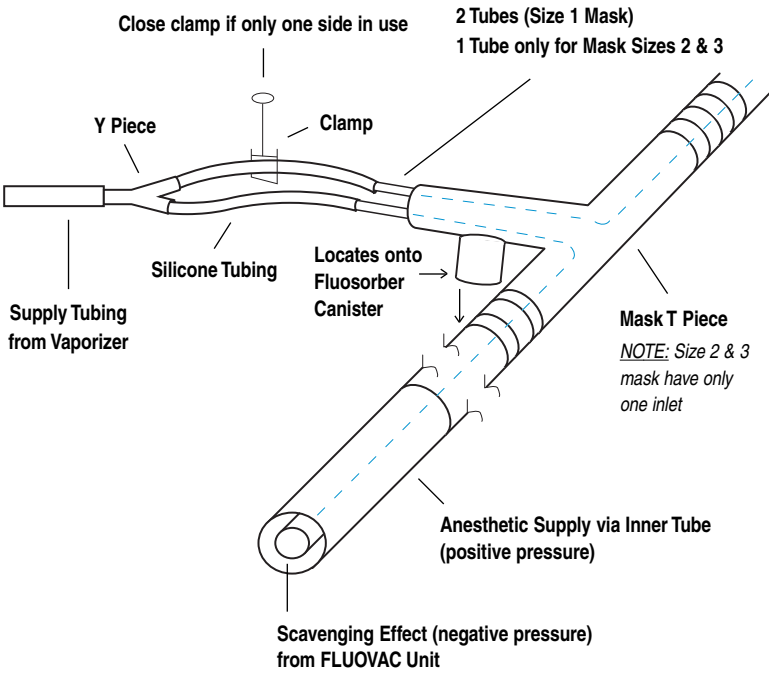

Diagram 5

Flow Diagram